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THE NAUTILUS.

VOL. XVIII. MAY, 1904. No. 1.

TWO NEW SPECIES OF PLEUROTOMA FROM CALIFORNIA.

BY WILLIAM JAMES RAYMOND.

Subgenus GENOTA H. and A. Adams.

Section *Dolichotoma* Bellardi.

Pleurotoma (*Genota*) *stearnsiana*, new species.

Shell broadly fusiform, spire acute, outline of spire moderately convex; whorls eight and one-half, convex anteriorly, slightly concave near the suture, the margin at the suture strongly appressed; suture distinct; aperture longer than the spire; color orange to cream, a broad, spiral, brown band below the suture and nine or ten narrow, clearly-defined bands on the last whorl, one or two of these also visible on the spire, bands nearly as wide as the lighter interspaces; interior of aperture yellowish, lighter within and spotted with brown on the outer lip by the external bands; first two whorls smooth, later whorls with numerous revolving threads, closely beaded on the spire by incremental lines which follow the outline of the lip, threads not beaded below the periphery of the last whorl, but roughened by the growth-lines and somewhat coarser anteriorly; aperture rather narrow; posterior sinus shallow, rounded; lip acute, produced below the sinus, canal wide; pillar solid, somewhat curved, obliquely truncate below. Operculum normal. Long. of shell 30.5, of aperture and canal 17, of body-whorl 23 mm.; max. diam. 13 mm. Divergence 50°. An extremely old specimen which shows a thickening of the pillar like an obscure fold, measures: long. of shell 41.5,

of aperture and canal 22.5, of body-whorl 29.5 mm.; max. diam. 18 mm. Divergence 48°. This specimen was dead when collected.

University of California Marine Biological Laboratory, stations 55 and 67, off San Diego, 25 to 30 fathoms, sand and mud, bottom temperature 50° F. Also dead specimens from stations 21 and 28, Catalina Island, 30 to 40 fathoms, sand and mud, bottom temp. 51° F.

P. (*Genota*) *stearnsiana* is at once separable from the forty or more specimens of its nearest ally, *P. carpenteriana*, examined by the writer. The former species is very uniform, although found in different localities. With the same number of whorls it is half as large as *P. carpenteriana* and is proportionately broader. The average ratio of length to diameter is 2.38 in five specimens of *P. stearnsiana*, in five specimens of *P. carpenteriana* it is 2.70. The spire is proportionately shorter in the former species and the brown bands are more conspicuous. *P. carpenteriana* has been found in the California Pliocene and Pleistocene and seems to be the first in time of a closely related group, embracing besides the two species already named, *P. tryoniana* Gabb, Pleistocene and Recent, and *P. cooperi* Arnold, found thus far in the Pleistocene of San Pedro only. It gives me great pleasure to dedicate the present species to Dr. Robert E. C. Stearns, known to all students of West American conchology.

Section *Antiplanes* Dall.

Pleurotoma (*Antiplanes*) *catalinae*, new species.

Shell sinistral, thin, elongated, slender, whorls ten to eleven; color light, pinkish-brown, without bands, interior of aperture a little lighter: upper whorls more or less chalky; nucleus smooth, inflated: later whorls convex, suture deeply impressed; sculptured by fine incremental lines and on the last whorls a few obscure, spiral striations, mostly below the periphery; anal fasciole traceable on the spire as a flattened or obscurely grooved band; aperture narrow; canal wide and short; pillar nearly straight, with a well-defined callus, obliquely truncate below; outer lip produced, deeply emarginate near the sutural margin of the whorl. Long. of shell 27, of aperture and canal 10.5; max. diam. 7.6 mm. Divergence 20°. Dredged in 125 fathoms, green mud, off Catalina Island, living, U. C. M. B. L. Station 36; off Point Loma, San Diego, 50 fathoms, Station 72 (a single, dead specimen); off Point Loma, 106 fathoms, green mud and sand, bottom temperature 47.9° F., Station 73.

This attractive shell is much like a reversed *P.* (*Antiplanes*) *santarosana* Dall, in color and sculpture, but the whorls are more oblique besides being reversed, and the spire is even more slender than in Dall's species. *P.* (*Antiplanes*) *catalinae* was found associated with *P.* (*Antiplanes*) *perversa* Gabb, which is also sinistral. The latter species is wider, has less rounded whorls and the color is a darker brown with a light, spiral band, as stated by Gabb in his original description. The two species are readily separated.

DESCRIPTIONS OF NEW JAPANESE LAND SHELLS.

BY H. A. PILSBRY AND Y. HIRASE.

Eulota (*Plectotropis*) *pannosa* var. *awashimana* n. var.

This race is similar to *E. pannosa* in color, texture, sculpture and the profuse peripheral fringe, but differs in being much smaller, proportionally higher, with decidedly narrower umbilicus, which is not enlarged at the opening, the base being almost angular around it. Whorls 5½, the last very shortly and slightly deflexed in front. It is more robust and less depressed than *E. deflexa*. Alt. 8, diam. 13 mm.

Awashima, Echigo. Types no. 86495, A. N. S. P., from no. 1164 of Mr. Hirase's collection.

Two species of *Plectotropis* have been described by A. Adams from Awashima: *H. setocincta* and *H. scabricula*. The first measures about 12x6 mm., the altitude half the diameter, being therefore more depressed than *awashimana*, in which the alt. is nearly two-thirds the diam. *H. scabricula* is about 9x6 mm., with 6½ whorls, the last "subangulate" peripherally. This species is therefore smaller than *awashimana*, with more whorls and blunter ambitus.

Helix conella A. Ad., 1868, from "Tabu-Sima" (not *H. conella* Pfr., 1861), is probably a synonym of *Plectotropis deflexa* Pfr., from the same island.

Eulota (*Plectotropis*) *shikokuensis subdivesta* n. subsp.

Shell more depressed than *E. shikokuensis*, and smoother, the oblong granules bearing no cuticular scales, the periphery without a fringe. Whorls nearly 6, the last very shortly and abruptly de-

flexed in front. Umbilicus more broadly open. Alt. 7, diam. 16 mm., umbilicus 5 mm. wide.

Sodayama, Tosa. Types no. 84783, A. N. S. P., from no. 1022 of Mr. Hirase's collection.

E. s. var. *hadaka* (NAUTILUS xvii, 105) is a much less depressed form, measuring, alt. 9.5, diam. 16, umbilicus 4 mm. wide, and alt. 8, diam. 14 mm.

Eulota (*Aegista*) *eminens* n. sp.

Shell broadly and deeply umbilicate, low-trochiform, dull yellowish-brown, finely striate, the last striæ on the last whorl broken into low granules, which when quite unworn bear short cuticular laminæ in places. Spire convex-conic. Whorls $6\frac{3}{4}$ to 7, slightly convex, closely coiled, and very slowly widening, the last whorl obtusely subangular at the periphery, and descending a little in front, very convex beneath. Aperture very oblique, rounded, about one-fourth of the circle excised at the parietal wall. Peristome thin, narrowly expanded, reflexed below. Alt. 7.3, diam. 10.8, width of umbilicus 3 mm.

Toba, Shima. Type no. 86493 A. N. S. P., from no. 590a of Mr. Hirase's collection.

This species belongs to the group of *Aegista mimula*, but differs from all the known species by its elevated spire, higher than in any other Japanese *Aegista*, and approaching the contour of the species referred to the section *Cœlorus*.

Eulota (*Aegista*) *mimula* var. *goniosoma* n. var.

This race resembles *mimula*, *trachyderma* and *mikuriyensis* in the rather small aperture with thin, expanded lip, subreflexed below, but not thickened within. The spire is low conoid-convex, the *periphery strongly angular* and the base convex, abruptly curving into the wide umbilicus. The lusterless surface is brownish-yellow, freckled with buff dots, finely, rather irregularly striate, and in some specimens retaining short, triangular cuticular laminæ below the periphery. Whorls $5\frac{1}{2}$ to $5\frac{3}{4}$. Alt. 6.5, diam. 11.3 to 12 mm., width of umbilicus 4 mm.

Amagisan, Izu. Types no. 86462 A. N. S. P., from no. 1165 of Mr. Hirase's collection.

On account of its strongly angular periphery, this might be con-

sidered a distinct species, and it may prove to be so; but it belongs to a group of forms which may for the present be ranked as subspecies of *E. mimula*, and including the following:

E. mimula Pils.

E. mimula trachyderma Pils. & Gude. (*E. aperta trachyderma*, Proc. A. N. S., 1901, 614).

E. mimula mikuriyensis Pils. (*E. aperta mikuriyensis*, Naut., xvi, 45).

E. mimula goniosoma Pils. & Hir.

Punctum elachistum n. sp.

Shell umbilicate, depressed, brown, the first whorl whitish. Whorls $2\frac{3}{4}$, the last one sculptured with rather widely spaced lamellæ and close spiral striæ in the intervals, the spire nearly smooth. The whorls enlarge rapidly, and the last one is somewhat compressed below the periphery, which is rounded. The aperture is large, oblique and rounded, about one-fourth of the circle excised by the preceding whorls. Alt. 7, diam. 1.2 mm.

Yanagawa, Chikugo. Types no. 86492 A. N. S. P., from no 1159 of Mr. Hirase's collection.

There are fewer whorls than in *P. leptum*, which is also a little larger, and judging from the figures, more densely lamellose.

Punctum apertum n. sp.

Shell broadly umbilicate, depressed, thin, brownish-corneous, sculptured with delicate, thread-like riblets, in large part cuticular. Whorls 3, convex, parted by an impressed suture. Aperture oblique, rounded, slightly more than one-fourth of the circle excised by the preceding whorl; peristome thin and simple. Alt. 7, diam. 2mm.

Nemuro, Nemuro. Types no. 86490 A. N. S. P., from no. 1156 of Mr. Hirase's collection.

This little snail from the northeastern province of Yesso, is distinguished by its depressed form and wide, shallow umbilicus.

Zonitoides chishimanus n. sp.

Shell openly umbilicate, whitish-corneous, thin; closely and delicately rib-striate, densely and finely striate spirally between the lamellæ. Spire convex. Whorls nearly $3\frac{1}{2}$, convex, slowly increasing, the last rounded peripherally and below. Aperture quite ob-

lique, wide-lunate, the peristome simple and thin. Alt. .7, diam. 1.1 mm.

Kunashiri, Chisohima chain (Kuril Is.). Types no. 86491 A. N. S. P., from no. 1155 of Mr. Hirase's collection.

This very small, whitish species is more closely sculptured than any Japanese *Punctum*, unless *P. leptum* Westerl. be an exception. That species from Nagasaki is larger and has a much narrower umbilicus.

Macrochlamys chaunax n. sp.

Shell perforate, convex-conic above, more convex below the slightly obtusely angular periphery, the angle above the middle; thin, somewhat transparent, pale yellow. Surface brilliantly glossy, showing some slight growth-wrinkles and densely-crowded, very minute spiral striæ. Whorls 4, moderately convex, the last about double the width of the preceding, subangular, the angle becoming obsolete at the aperture. Aperture rather large, rounded-lunate. Peristome simple and thin, reflexed at the columellar insertion. Alt. 2.7, diam. 4.5 mm.

Imotoshima, an islet south of the Hahajima, Ogasawara. Types no. 83030 A. N. S. P., from no. 899 of Mr. Hirase's collection. Also found on Hahajima.

Macrochlamys cerasina shinanoensis n. subsp.

Shell resembling *M. cerasina* and *M. gudei*, but much larger than the former, more globose and more glossy than the latter. There are $6\frac{1}{2}$ convex, very slowly widening whorls, the last one angular at the periphery in front, becoming rounded on the latter part. Spire low conic, with nearly straight outlines. Base strongly convex, impressed around the narrow axial perforation, which is nearly concealed by the triangular dilation of the columellar lip. Alt. 10.4, diam. 7.4 mm.

Enasan, Shinano. Types no. 86483 A. N. S. P., from no. 1173 of Mr. Hirase's collection.

Tornatellina monodonta n. sp.

Shell imperforate, ovate-conic, thin, pale yellowish corneous, imperfectly transparent, almost smooth. Spire straightly conic, the apex obtuse. Whorls $4\frac{3}{4}$, moderately convex, the last somewhat swollen. Aperture oblique, ovate, somewhat less than half the total length. Outer lip thin and simple, columella strongly twisted, form-

ing a white spiral fold. No parietal lamella. Length 3, diam. 1.9 mm.

Imotojima, Ogasawara. Types no. 86479 A. N. S. P., from no. 1158 of Mr. Hirase's collection.

This form is distinguished at once from others described from Ogasawara-jima and the islands of Izu by the absence of a parietal lamella. It occurs also on Hahajima, no. 1158*a* of Mr. Hirase's collection.

Carychium nipponense n. sp.

Shell oblong, with a rather wide spire and obtuse apex, clear, transparent corneous, smooth and glossy. Whorls 4, convex, the suture well impressed. Aperture oblong, oblique, with a single, small, acute lamella at the middle of the inner margin, and a larger tubercle opposite to it within the outer lip, which is thickened throughout. Length 1.3, diam. .6 mm.

Sendai, Rikuzen. Types no. 86441 A. N. S. P., from no. 1157*a* of Mr. Hirase's collection.

A dwarf among pygmies. It is like *C. hachijoense* in its polished surface, but differs in the wide spire, not tapering regularly as in that insular form. *C. noduliferum, pessimum* and *borealis* are all conspicuously striate. *C. noduliferum* and *C. nipponense* are the only species at present known from the main island of Japan. Specimens sent from Uji-Yamada, Ise, indicate that *C. nipponense* has a wide range along the ocean coast of Nippon.

Alycæus oshimanus n. sp.

Shell of the depressed low-conoid shape of other Japanese species, the umbilicus oblong, the last whorl deviating tangentially about half-way across the preceding. Whorls $3\frac{3}{4}$, the first two smooth, reddish or yellowish, the following whorl rib-striate, at first finely and closely, but on the first half of the last whorl the riblets become quite widely spaced. Last half of the last whorl swollen, and very much more finely and closely sculptured than any other part of the shell; the neck rather strongly contracted, then swollen and sculptured again. Aperture very oblique, circular, the lip strengthened by an external rib, built forward beyond the rib, the upper and lower margins arched forward a little. Alt. 2, diam. 4 mm. Operculum thin, yellow.

Oshima, Osumi. Types no. 83385 A. N. S. P., from no. 931 of Mr. Hirase's collection.

This species differs from the allied *A. vinctus* in its sculptured neck and less developed "collar" or lip-rib. No land shell of the important island of Oshima is known to be identical with species of Kyushu or of the main island of Japan.

Stenothyra formosana n. sp.

Shell small, ovate, smooth and glossy, yellowish olivaceous. Spire convex-conic, about 4 whorls remaining, the earlier ones being eroded. Last whorl moderately inflated, distinctly compressed from back to face, strongly contracting to the aperture, which is subvertical, ovate, and not much exceeding one-third the length of the shell. Length 3.9, diam. 2.2 mm.

Kironten, Formosa. Types no. 86485 A. N. S. P., from no. 159 of Mr. Hirase's collection.

This small, plain species is related to a form in the collection of the Academy labelled *S. glabra* A. Ad., but is very much larger, and not quite so much contracted at the aperture. *S. glabra* was not very fully defined by Adams. It was described from Peiho, but has been reported from Formosa by Nevill, Handlist Ind. Mus., p. 43.

Melania hahajimana n. sp.

Shell rather thin and light, yellowish olive, usually with some indistinct reddish longitudinal streaks on the spire; somewhat glossy, sculptured with irregular, unequal but fine spiral grooves and striæ, which on the spire cut the longitudinal growth-wrinkles into oblong beads, irregularly and unevenly developed. The spire is slender with slightly concave outlines. Apex eroded, 6 or 7 remaining whorls but slightly convex, separated by an impressed, oblique suture. Last whorl inflated in the middle. Aperture ovate, oblique, broadly rounded below, the thin lip slightly sinuous.

Length 34, diam. 10.5, length of aperture 10.5 mm.

Length 30, diam. 10, length of aperture 10.8 mm.

Hahajima, Ogasawara. Types no. 8645 A. N. S. P., from no. 172 of Mr. Hirase's collection.

The slender spire, thin texture and inflated last whorl widely separate this form from *M. boninensis* of Chichijima, the only Melanian hitherto known from the Ogasawara-jima. It is related to *M.*

tuberculata (Müll.), a widely distributed Oriental form, much more strongly sculptured, with more convex whorls.

M. boninensis Lea has been found to grow much larger than the original examples, reaching a length of 32.5 mm.

Melania libertina var. *gigas* n. v.

Very large, finely striate spirally, more coarsely so at the base, but without longitudinal folds. Olivaceous-brown, yellow in places, with some darker-brown streaks; the color concealed by a black ferrous coat. Length of decollate shells with about 4 to 4½ whorls remaining, 48 to 51, diam. 20 mm., length of aperture 21 to 22 mm.

Arato, Echizen. Types no. 86441 A. N. S. P., from no. 171 of Mr. Hirase's collection.

This is the largest Japanese Melanian now on record. Some specimens of *M. löbbeckiana* are longer, but they are not so stout in figure.

A SINGULAR EOCENE TURBINELLA.

BY WILLIAM HEALEY DALL.

A singular *Turbinella* has recently been received from Mr. S. W. McCallie, of Georgia, which seems to stand, to some extent, between the two well known types, *Turbinella* proper and *Vasum*.

Psilocochlis subg. nov.

Shell thick and heavy, with depressed dome-like spire and few whorls, a strong siphonal fasciole surrounding a wide umbilical funnel, which is completely filled by a heavy deposit of callus, which also extends to the posterior angle of the aperture; the pillar exhibits three strong elevated plaits, and the surface is smooth or free from ribs, nodules, or prominent sculpture of any kind. Type:

Turbinella (*Psilocochlis*) *McCallie* sp. nov.

Shell short and broad, with about four whorls, of which all but the last are very small; apex hardly rising above the last whorl, which is dome-shaped above and widest at about the level of the posterior angle of the aperture, diminishing forward and slightly constricted behind the strong and flaring siphonal fasciole; umbilical funnel smooth, but nearly filled with a smooth appressed mass of callus, con-

tinuous over the body, and much thickened behind; pillar straight, with three strong plaits, canal shallow, short; suture distinct, surface smooth except for very fine incremental and revolving lines; outer lips broken, but apparently simple and sharp. Length 50, max. breadth about 38 mm., diameter of umbilical funnel about 20 mm.

Horizon: Claibornian Eocene of Richmond Co., Ga.

This singular shell has very much the aspect of *Pyrula smithii* Lea (*Lacinia alveata* Conrad), Contr. to Geology, pl. v, fig. 162; but has a lower spire, and is wider and rounder at the shoulder, beside having the strong plaits on the pillar which do not exist in *Lacinia*. It will be illustrated in a forthcoming publication. Meanwhile collectors should be on the lookout for it.

NEW VARIETIES OF AMERICAN LIMNÆAS.

BY FRANK COLLINS BAKER.

Limnæa reflexa iowaensis var. nov.

Shell thin, with a short, dome-shaped spire; whorls 5–5½, rather flat-sided, loosely coiled; suture well marked but not profound; aperture with the characteristic turret of typical *reflexa*, with a heavy plait extending across the columellar callus; spire and aperture of equal length; color dark horn, either plain or with spiral or longitudinal zebra-like markings; aperture marked internally by several longitudinal red bands, indicating the position of former peristomes; umbilicus covered.

Length 28.50, width 12.00, aperture length 13.50, width 7.00 mill.
Length 30.00, width 11.50, aperture length 15.00, width 7.00 mill.
Length 26.50, width 11.50, aperture length 14.00, width 7.50 mill.
Length 26.00, width 11.00, aperture length 12.00, width 6.00 mill.

This peculiar variety was found in a collection recenlty sent to the writer for study, by Mr. Bryant Walker. It differs from all forms of this species in having the spire and aperture of equal length, in the peculiar dome-shaped spire and in the general robust appearance.

In the Illinois and Michigan Canal, at Joliet, this variety is found and shows a perfect gradation from the short, stumpy variety, with

spire and aperture of equal length, to the long, spiral *reflexa*. In this lot one may trace the variation from *iowaensis*, through *umbrosa* and *jolietensis* to typical *reflexa*.

In a lot of shells received from Mr. Henry Hemphill, four specimens were found which appear to belong here. Two specimens are fairly typical, while two show a variation toward variety *umbrosa*. They are from Lake Albert Lea, Minnesota. The types are from Muscatine, Iowa.

Limnæa reflexa crystalensis nov. var.

Shell solid, with dome-shaped spire; whorls 5–6, flatly rounded, loosely coiled; sutures not impressed, but well marked; spire of variable length, but typically about the length of the aperture; aperture long-ovate, peristome with a heavy internal rib; columellar callus heavy, spreading over the inner lip and crossed by a strong plait; umbilical region showing a slight perforation beneath the overhanging columellar callus; color light or dark horn, some species are strongly zebra-marked, and all exhibit the fine wavy sculpture of this group of Limnæas. It seems sometimes malleated.

Length 19.50, width 8.00, aperture length 9.00, width 4.00 mill.
Length 21.00, width 8.00, aperture length 10.00, width 5.00 mill.
Length 22.00, width 9.00, aperture length 10.50, width 5.50 mill.
Length 23.00, width 8.50, aperture length 10.50, width 5.00 mill.
Length 23.50, width 10.50, aperture length 12.50, width 5.50 mill.
Length 28.00, width 10.00, aperture length 12.00, width 6.00 mill.
Length 23.50, width 9.00, aperture length 11.00, width 5.00 mill.
Length 28.00, width 9.00, aperture length 11.50, width 5.50 mill.

This variety may be collected in countless numbers at Crystal Lake, Illinois. The lot from which this description was drawn numbers 105 specimens, and was collected by Dr. N. H. Lyon. This variety bears the same relation to *reflexa* that variety *michiganensis* Walker does to *palustris*, and its growth is probably governed by the same physical conditions.

Limnæa reflexa hemphilliana nov. var.

Shell rather solid; color light horn; whorls 6, very flat-sided, loosely coiled, nuclear whorls very dark red; sutures not impressed; spire acutely pyramidal, about as long as the aperture; aperture elongate-ovate; peristome thin, bordered internally by a red band;

columella oblique, with a rather heavy plait; parietal wall covered by a spreading callus which almost closes the umbilicus; some specimens show a tendency to become malleated.

Length 27.00; width 11.00; aperture length 14.00; width 7.25 mill.

Length 27.00; width 11.50; aperture length 15.00; width 7.50 mill.

Distribution: Lake Albert Lea, Minnesota.

Specimens of this very distinct variety were found in a lot of shells received from Mr. Bryant Walker. They look like a widened-out variety *exilis* with a short spire. They have some relation to the variety *iowaensis*, but the spire is sharply conic, while in that variety it is dome-shaped.

GENERAL NOTES.

LIMAX MAXIMUS L. IN CALIFORNIA.—The United States National Museum has recently received several specimens of this species from Mr. S. A. Pease of San Bernardino, Cal. Mr. Pease informs us that they were collected out of doors, near a house, in Redlands, and that it was reported to him that they were feeding upon flowers and plants. He also states that he has heard of this same slug in different parts of San Bernardino county.

The specimens sent us are darker than the usual East American form and not so large, the longest individual (preserved in formalin) measuring 58. mm.—PAUL BARTSCH.

NOTICE OF SIX NEW SPECIES OF UNIOS FROM THE LARAMIE GROUP.—By R. P. Whitfield (Bull. Amer. Mus. Nat. Hist., XIX, 1903, p. 483–487). *U. æsopiformis*, *verrucosiformis*, *retusoides browni*, *percorrugata* and *postbiplicata* are described from Snow Creek, on the Missouri River, about 130 miles N. W. of Miles City, Montana. The names indicate the species of the recent fauna believed to be related to these Laramie forms; but the radial V-like beak-sculpture of at least part of them shows that there is nothing in the supposed relationship of the Laramie forms to any surviving North American Unios. They belong to the *Hyriinæ* of Simpson's arrangement, and are only referable to *Unio* in a Lamarckian sense. The name *Unio browni* Whitf. being preoccupied, that species may be called *Parreysia barnumi*. It is named for Mr. Barnum Brown, who collected the series.—*H. A. Pilsbry.*

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THE NAUTILUS

A MONTHLY
DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

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THE NAUTILUS.

VOL. XVIII. JANUARY, 1905. No. 9.

ON AN INTERESTING FOSSIL UNIO FROM WISCONSIN.

BY GEORGE WAGNER.

A little over a year ago Mrs. George Marston, of Quincy, Illinois, presented to the University of Wisconsin the mollusca brought together by her late husband, an ardent and an able collector of our Wisconsin forms. The collection was placed in my hands for arrangement. In looking it over I was immediately attracted by a single somewhat broken valve of a Unio, evidently fossilized, and the only fossil form in the collection.

Mrs. Marston had very kindly, and very wisely, sent with the collection all of her husband's correspondence relating to it. In looking over the letters I came across a copy of one written by Mr. Marston, and containing the necessary locality data for this shell.

According to this letter the shell was found about 1889 in the city of Green Bay, Wisconsin, during excavations for the city waterworks reservoir. It came from a depth of about fifteen feet below the surface, and presumably from the till.

As Mr. Marston well knew, the shell is wholly unlike any Unionid now found in Wisconsin. It is a left valve, quite heavy but very brittle. When found, the outer surface still retained most of the epidermis, but this has almost entirely disappeared. The height is 70 mm., the breadth of the single valve approximately 22 mm.

The shell when complete was very evidently smooth, with a rather elliptical outline. The wall is thick but thins down considerably

toward the posterior end. Anterior margin incrassate. Posterior dorsal curve regular and strong. Posterior umbonal slope flattened, and separated by a decided angle from the lateral slope. There are some traces of waviness on this posterior slope. The umbones are not very prominent and but very slightly incurved; the ligament long and heavy. The cardinal teeth, though much weathered, were evidently short and heavy, the lateral teeth long and nearly straight. The anterior adductor cicatrix is large and deep, strongly pitted; the protractor impression triangular. The pallial cicatrix is very deep, and crenulate. Only a small portion of the posterior cicatrix remains.

On comparing the valve with the Unios in our collection, I am forced to the conclusion that we have here a specimen of *Unio crassidens* Lam. I am further strengthened in this belief on comparing the specimen with the figures and description of *U. crassidens* by Call (a study of the Unionidæ of Arkansas, etc.—Trans. Ac. Sciences, St. Louis, Vol. VII, pp. 1–65, plates I–XXI). Finally I have compared it with two specimens of *U. crassidens*, one from the Ohio river, the other from southern Michigan, which were kindly sent to me for this purpose by Dr. W. S. Strode, of Lewistown, Illinois. It may be that further material will force us to recognize it as a separate variety, but I do not think it probable.

Now let us consider the present distribution of *U. crassidens*. According to Call (*l. c.*) it is abundant in the Cumberland river of Tennessee as well as in other rivers of that State. It occurs abundantly also in the Coosa and the Alabama, in the Tombigbee, and southeast to the Chattahoochee (Simpson, Synopsis of the Naiades, Proc. U. S. Nat. Mus., Vol. XXII, pp. 501–1044). It also occurs in the Mississippi and its eastern tributaries as far north as the forty-second parallel; or, in general, to northern Illinois and southern Michigan. It does not occur within the Basin of the Great Lakes, neither has it ever been found in any stream west of the Mississippi so far as I know. We must look upon it then as essentially a southeastern form, with its center of distribution lying probably somewhere in the rivers of Tennessee.

We are thus confronted with the problem of its occurrence, in fossil form at Green Bay, in the St. Lawrence Basin. It is because this involves an interesting point in the causes affecting present geographical distribution, that this note is written.

One of the marked topographic features of Wisconsin is a long diagonal valley extending from Green Bay, and really as a continuation of the basin of this bay, toward the southwest. It follows the basin of Lake Winnebago and the course of the Fox river. In the neighborhood of Portage it overrides the water-shed, and is continued in the valleys of the Wisconsin and the Rock. At Portage the Fox and the Wisconsin are less than two miles apart, and in Spring become confluent, the upper Wisconsin contributing largely toward the floods of the Fox (Irving, Geology of Wisconsin, Vol. II, pp. 418, 419).

Now, according to Irving (l. c. p. 426), it is very probable that in preglacial times the entire area of the Fox river drainage, including the basin of the Wolf, far north of Green Bay, was drained by the Wisconsin, or a stream occupying approximately its bed. Given this former unity of the Fox and the Wisconsin drainage, the occurrence of a Mississippi form as a fossil in Green Bay is made clear, even though this form be now a southern one. For it must be remembered here that southern forms in general had a decidedly more northern distribution before the Pleistocene, and especially before the Pliocene.

How as to its disappearance? We know that during the Pleistocene the northern part of our hemisphere became ice-coated nearly as far south as the Ohio river. One of the lobes of this great ice mass entered this very same Green Bay—Wisconsin Valley—and plowed through it nearly its entire length.

It is evident that this enormous ice mass swept everything living before it, or buried it beneath, and *Unio crassidens* had to go with the rest.

When the ice finally receded the conditions were so changed as to forbid the establishment of previous faunal conditions. In the first place, the drainage of the Fox was now separated from that of the Wisconsin. But more important, the climate of this region had become so much colder that many of the former inhabitants, *U. crassidens* among them, seem not to have been robust enough to regain even such part of their former territory, to which the waterway was freely open. Finally alteration in tension between various species probably also contributed to the same general result.

It is highly desirable that the Unionids, as well as other mollusca found on both sides of the divide between the Mississippi and St.

Lawrence Basins be much more completely studied, especially in regions where the divide is narrow. Together with this we need to obtain and study the fossil forms of the Tertiary and Pleistocene. Thus and thus only can we get a much more accurate and detailed knowledge of the effect of the Glacial Period on the distribution of animals.

Plate VII. External and internal views of fossil *Unio crassidens* from Green Bay.

University of Wisconsin, Zoölogical Laboratory, November 29, 1904.

ON THE SPECIES OF MARTESIA OF THE EASTERN UNITED STATES.

BY CHARLES W. JOHNSON

Three species of the genus *Martesia* are found on the eastern coast of the United States. They are more abundant south of Cape Hatteras, becoming less common or rare to the northward. Like most burrowing shells they are subject to considerable variation. There is also a great difference in appearance between the young and adult shell, the large anterior gape of the young being closed in the adult by a calcareous deposit called the "callum" attached to either valve and extending to the middle or lower edge of the valve.

The shell has a large protoplax and a narrow elongated metaplax and hypoplax; mesoplax and siphonoplax wanting; valves with a single radial sulcus. The species can readily be distinguished by the form of the protoplax, which though showing slight variation, probably due to a favorable or unfavorable *situs*, is quite constant in its general character.

MARTESIA STRIATA (Linn.). Fig. 1.

Pholas striata Linn., Syst. Nat. 12 ed. 1111, 1767.
Pholas pusilla Linn., Syst. Nat. 12 ed. 1111, 1767.
Pholas nana Pultney, Dorset. Cat. p. 27, 1799.
Pholas falcata Wood, Gen. Conch. t. 16, f. 5–7, 1815.
Pholas clavata Lam., Anim. s. Vert. V, p. 446, 1818.
Pholas conoides Fleming, Brit. Anim. p. 457, 1825.
Pholas Hornbeckii Orb., Historia Fis. Polit. y Nat. de la isla de

Cuba, Moluscos, p. 282, pl. 25, f. 23–25 (1845); and in the French edition, p. 217, pl. 25, figs. 23–25, 1853.

Pholas semicostata H. C. Lea, Proc. Bost. Soc. Nat. Hist. I, 204, 1844; Boston, Jour. Nat. Hist. V, p. 285, pl. 24, f. 1, 1845.

Pholas terediniformis Sowb., Proc. Zoöl. Soc. 1849, p. 161.

Pholas Beauiana Recluz, Jour. Conch. IV, p. 49, pl. 2, f. 1–3, 1853.

Pholas corticaria Sowerby, Thes. Conch. II, 495, pl. 108, f. 94–96, 1855.

Martesia striata Tryon, Mon. Pholadacea, p. 92, 1862.

Martesia corticaria Tryon, Mon. Pholadacea, p. 92, 1862.

Shell narrowly wedge-shaped, thin, anterior truncated, cordate, with sinuous elevated crenulated ridges, showing slight radial sculpture anteriorly; radial sulcus slight; the posterior portion marked only by somewhat irregular concentric undulations or growth lines; callum smooth, and angulate at the line of attachment; the protoplax normally three-lobed, those of the sides sometimes wanting in the smaller specimens, giving the protoplax a "halberd-shaped" appearance as shown in the figure of *P. corticaria* Sowb. Length, 8–23 mm.

Distribution, South Carolina, Florida and the West Indies, Europe, Japan (Dunker), Philippines (Cuming). It was described by Linnaeus from southern Europe, while to the West Indian shell he gave the name of *P. pusilla*. The slight radial sulcus and angular margin of the "callum" of *P. semicostata* H. C. Lea, shows that it is undoubtedly a synonym of this species. *P. terediniformis* and *P. falcata*, as stated by Tryon, are only the young of this species. *P. Hornbeckii* Orb., also comes under this category. The type of *P. corticaria* was found in a piece of cast-up mahogany.

Through the kindness of Mr. J. J. White, of Rockledge, Florida, I received an interesting series varying in size from 8–21 mm. long. They were collected at Oceanus, Florida. These specimens were also found in drift-wood, a feature which undoubtedly accounts for the wide distribution of this species.

MARTESIA CUNEIFORMIS (Say). Fig. 2.

Pholas cuneiformis Say, Jour. Acad. Nat. Sci. II, p. 322, 1822.

Martesia cuneiformis Tryon, Mon. Pholadacea, p. 91, 1862.

Shell broadly wedge-shaped, anteriorly truncate, cordate; with broad sinuose crenulated ridges, the anterior crenulations forming

radial costae; near the deep radial sulcus the crenulations are wanting, and beyond the sulcus are merely concentric undulations or growth lines, callum smooth, line of attachment rounded, cordate; protoplax arrow-shaped with a medial depression and oblique striæ. Length, 14–18.

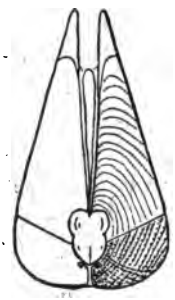

Fig. 1.

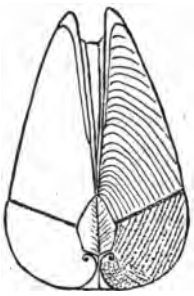

Fig. 2.

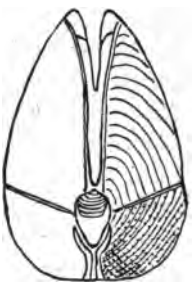

Fig. 3.

Connecticut to the West Indies. Near New Haven, Ct., in oyster shells (Perkins); Holly Beach, N. J. (Ford); Oceanus, Fla. (White), and found by the writer at St. Augustine.

Subgenus Diplothyra Tryon, 1862.

The protoplax and also the metaplax are bordered by an elevated callous margin; in the former case obliterating the deep depression in front of the umbones. Metaplax and hypoplax divaricating. Tryon considered the sculptured and smooth portions of the protoplax as a "double accessory valve," and on that character founded the genus *Diplothyra*. The above characters seem to separate it subgenerically from the typical *Martesia*.

Martesia (Diplothyra) caribæa (Orbigny). Fig. 3.

Pholas caribæa Orb., Historia, etc., p. 281, pl. 25, f. 20–21, 1845. French edition, p. 211, t. 25, f. 20–21, 1853.

Diplothyra Smithii Tryon, Proc. Acad. Nat. Sci. 1862, p. 450; Mon. Pholadacea, etc., p. 126, pl. —, f. 2, 1862.

Shell broadly wedge-shaped, inflated anteriorly and tapering abruptly towards the posterior; the anterior half with fine wavy lines forming slight radial costæ, radial sulcus quite prominent, posterior half marked only by small concentric undulations and growth lines;

the form of the protoplax is variable and the sculptured portion often very irregular or obsolete; callum round and tumid. Length, 9–17 mm.

New York to Florida, Cuba and Texas. Tottenville, Staten Island, burrowing in oyster shells (Tryon).

Although the figure given by d'Orbigny lacks the protoplax, the raised callus border surrounding it is clearly defined, while his description of the protoplax—"Ovato-oblonga, antice producta, acuta uncinata, postice dilatata angulata," agrees with what has been considered *D. smithii*. During my residence at St. Augustine (1880–87), I found a large number of fine specimens in a piece of soft artificial limestone off the water battery of Fort Marion. In my list of the shells of St. Augustine (THE NAUTILUS IV, 4) I confused this with *M. cuneiformis*. This species has only been recorded from shells and limestone while *M. striatus* and *cuneiformis* are more frequently found in wood. Its occurrence as far north as New York is probably accidental.

NOTE ON THE NOMENCLATURE OF THE SNAILS USUALLY CALLED PUPA.

BY T. D. A. COCKERELL.

Since it appears that the name *Pupa* is not applicable to the snails usually known as *Pupa muscorum*, *blandi*, etc., it becomes necessary to determine what generic name they are entitled to. Mr. B. B. Woodward has placed them in *Jaminia*, Risso, 1826, of which he regards *Pupilla*, Leach, as a synonym. A study of Dr. Dall's paper in NAUTILUS, 1904, p. 114, convinced me that this conclusion was not unassailable, and with the help of additional information very kindly supplied by Dr. Dall, I have decided to my own satisfaction in favor of *Pupilla*. The argument is as follows:

1. *Jaminia*, Risso, 1826, contained species afterwards referred to *Alæa* (1830), *Abida* (1831), *Pupilla* (1831), *Eucore* (1837), and *Sphyradium* (1837). The first species is *minutissima* Hartmann, but this does not agree with the generic diagnosis. The only figured species is an *Abida*, or *Eucore*.

2. *Alæa*, Jeffreys, 1830, contained among other things *edentula*, Draparnaud (now referred to *Sphyradium*) and *minutissima*, Hartmann. The latter is taken as the type by Dr. Dall (t. c., p. 115). Conchologically, *minutissima* has the characters of *Sphyradium*, and not at all those of *Vertigo*, *Pupilla*, etc. Its reference to *Sphyradium*

should be fortified by an examination of the jaw and lingual membrane, but for my own part, I am satisfied that it belongs there. If this is confirmed, *Alæa* takes the place of *Sphyradium*, Agassiz, 1837.

3. *Abida*, Leach in Turton, 1831, has for its sole example and therefore type *Pupa secale*. *Eucore*, Agassiz in Charpentier, 1837, was proposed for *P. tridens* and *P. quadridens*. I do not think these can be regarded as different genera, but the characteristic European group of "*Pupa*" *secale*, *P. tridens*, *P. quadridens*, etc., surely deserves to rank as a valid genus, separate from the circumpolar group commonly known as *Pupa*, subg. *Pupilla*.

4. If *Alæa* = *Sphyradium*, and *Eucore* = *Abida*, all the species of *Jaminia* were provided for by 1831. If *Sphyradium* is distinct from *Alæa*, apparently the diagnosis of *Jaminia* prevents us from using that name for *Sphyradium*.

5. *Jaminia* is therefore either *Abida* or *Pupilla*, both published in the same work. *Abida* has in its favor the figured example; *Pupilla* has Mr. B. B. Woodward's decision. Apparently priority of place should decide the matter.

6. Dr. Dall informs me that in Turton *Pupilla umbilicata* is on p. 98, *P. marginata* (our *muscorum*) on p. 99; *Abida secale* on p. 101 as a synonym of *Vertigo secale* (Draparnand) Turton. Hence *Pupilla* was first removed, and *Jaminia* stands as the proper name for *Abida*, with *Eucore* as a section.

7. I do not think the status of *Pupilla* is affected if we regard *umbilicata* as its type, for I cannot imagine any one could place *umbilicata* and *muscorum* in different genera.

8. Our forms of *Pupilla* stand thus:

Pupilla muscorum (Linné).
- b. *unidentata* (C. Pfr.).
- c. *bigranata* (Rossm.).

Pupilla hebes (Ancey).

Pupilla blandi Morse.
- b. *sublubrica* (Ancey).
- c. *obtusa* (Ckll.).
- d. *alba* (Ckll.).

Pupilla sonorana (Sterki).
- b. *tenella* (Sterki).

Pupilla syngenes (Pilsbry).
- b. *dextroversa* (Pils. & Van.).

Pupilla sterkiana (Pilsbry).

NOTES ON THE NOMENCLATURE OF PUPILLIDÆ.

BY H. A. PILSBRY.

The receipt of an article from Professor Cockerell upon this subject, published in this number, causes me to insert here some notes which had been prepared for a forthcoming paper upon the snails of Arizona and New Mexico. The status of the name *Pupa* was discussed by Mr. B. B. Woodward (Journ. of Conch., Oct., 1903, 358), who did good work towards clearing the ground. Dall in this journal for February, '04, also went over the nomenclature correcting some errors, but complicating the question by a few new ones. His statement that "Risso's first species [of *Jaminia*] is *Vertigo minutissima* Hartmann, which should properly have been placed in *Suraphia*," is not borne out by an examination of Risso's work, wherein the species stand thus:

Risso's species.	*Equivalents in ordinary use.*	*Modern genus.*
Jaminia muscorum	Pupa muscorum L.	Pupilla.
J. marginata	Pupa umbilicata Drap.	Jaminia.
J. edentula	Bulimus obscurus Müll.	Ena.
J. secale	Pupa secale Drap.	Abida.
J. tridens	Bulimus tridens Brug.	Eucore.
J. granum	Pupa granum Drap.	Abida.
J. sulculata	Undetermined	Abida.
J. trilamillata	Undetermined	Abida.
J. heterostropha	Bul. quadridens Müll.	Eucore.
J. quinquelamellata	Pupa cinerea	Abida.
J. septemdentata	Pupa avenacea Brug.	Abida.
J. heptodonta	Undetermined	Abida?
J. multidentata	Pupa polyodon Drap.	Abida.
J. niso	Bulimus niso Pfr.	Eucore.

All of Risso's species of *Jaminia* that are recognizable belong to the subsequent groups *Ena* 1831, *Pupilla* 1831, *Abida* 1831, *Eucore* 1837, and *Lauria* 1840.

Now *P. muscorum* under the name *marginata* was second of the two species for which the name *Pupilla* was proposed in 1831 in Turton's *Manual*, the other being *P. umbilicata*. The latter was removed in 1840 to *Lauria*, leaving *P. muscorum* the type of *Pupilla*. There is

nothing especially new about this conclusion, since it was reached by Gray in 1847 (P. Z. S., p. 176), and has been held by Pfeiffer, by Von Martens (Die Hel. 1860, p. 290), and nearly every one else. There have been differences of opinion about the limits of the group *Pupilla*, but never about its type. Among American writers, Morse and Tryon have used *Pupilla* as a generic name.

Abida was next removed from *Jaminia*. This is the group commonly known as *Torquilla*. Then in 1837 *Eucore* was proposed for the species *tridens* and *quadridens* (*heterostropha* Risso). These successive eliminations leave only the group *Lauria* Gray, represented by *J. marginata* Risso (= *Pupa umbilicata* Drap.) to bear the name *Jaminia*.*

From the foregoing it follows that the name *Pupilla* will replace *Pupa*, as Prof. Cockerell has held. The groups represented in *Jaminia* Risso, will stand thus:

PUPILLA Lch. in Turton, for *Pupa* of authors.

JAMINIA Risso, restricted, for *Lauria* Gray.

ENA Leach in Turton, for *Buliminus* Auct.

ABIDA Leach in Turton, for *Torquilla* Auct.

EUCORE Ag. in Charp., for *Chondrula* Auct.

All of these groups I regard as of generic rank.

As to *Saraphia* Risso, the only species of the group that has been positively identified is *S. tridentata*, which is the *Carychium tridentatum* of recent authors.

After a bout with Risso, one is likely to accept as a just one Bourguignat's estimate of his abilities: "Écrivain fécond, mais sans jugement, innovateur infatigable, mais absurde, Risso a embrassé dans ses écrits presque toutes les branches de l'histoire naturelle, sans en avoir bien traité une seule."

The group *Alæa* Jeffreys, 1830, has been discussed by Professors Dall and Cockerell, who agree that its type must be *Pupa minutissima* Hartm. It does not do to fix types for these old groups without reference to what has been done by our predecessors. Gray and Herrmannsen took a hand in this game over fifty years ago, and they expressly selected *Alæa palustris* = *Vertigo antivertigo* as the

* The progress of events had already restricted *Jaminia* before Gray chose *J. heterostropha* for its type (P. Z. S., 1847, p. 176). His selection came too late and is ineffective.

type of *Alæa*. I do not see how their action can be successfully opposed. The name *Alæa* has quite generally been used for dextral forms of *Vertigo*, and is so retained in Westerlund's last *Catalog*. No valid grounds exist for shifting the name; and the advisibility of substituting *Alæa* for *Sphyradium*, as Prof. Cockerell suggests, need not be considered. His suggestion that *P. minutissima* may be a *Sphyradium* is interesting, and deserves investigation.

Ptychochilus Boettger, is preoccupied by Agassiz in *Pisces;* a fact I neglected to mention at the time I proposed *Nesopupa*. The names stand thus:

Ptychocheilus Agassiz, Amer. Journ. Sci. and Arts, XIX, 1855, p. 227.

Ptychochilus Jordan, Bull. U. S. Nat. Mus. no. 10, p. 58 (1877).

Ptychochilus Boettger, Conch. Mittheil., 1881.

Bifidaria and *Eubifidaria* of Sterki call for some notice in view of the note by Dall in NAUTILUS, Feb., 1904, p. 116. The original species referred by Sterki to *Bifidaria* were *Pupa contracta* Say and *P. servilis* Gld. from certain Mexican localities. For *P. contracta* Sterki subsequently (1892) proposed the section *Albinula*, leaving *servilis* the type of *Bifidaria*.

In January, 1893, Dr. Sterki proposed *Eubifidaria* with the type "*hordeacea* Gabb," by which he meant the form which I call *Bifidaria procera cristata*. This is demonstrated by his previous article treating of "*hordeacea*," by his list of the preceding year, and by the words of his diagnosis of *Eubifidaria*, "lamellæ typical."

The type of *Eubifidaria* is therefore *P. hordeacea* Sterki *not Gabb* = *B. procera cristata* P. & V., and the group becomes an absolute synonym of *Bifidaria*, s. str. The true *hordacea* Gabb, which Dr. Sterki demonstrably did not intend, belongs to a different genus, *Pupoides*.

In conclusion I might say that the generic and subgeneric nomenclature of the United States forms, given in my catalogue of 1900,* stands as there set forth with the single exception of the genus *Pupa*, which now becomes *Pupilla*.

The family name having precedence for the group is *Pupillidæ* Turton, 1831.

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* Proc. Acad. Nat. Sci. Phila., 1900, pp. 605–610.

NEW SPECIES OF PISIDIUM.

BY V. STERKI.

PISIDIUM LIMATULUM, n. sp.

Mussel small, inequipartite, somewhat oblique, well inflated, superior margin slightly curved, angle at the scutum projecting and rather sharp, at the scutellum rounded; supero-anterior slope distinct, almost straight, anterior end a rounded angle situated low; inferior margin rather well curved, posterior truncate; beak somewhat posterior, moderately large and projecting over the hinge margin, rounded or slightly flattened on top; surface dull to somewhat shining with subregular, crowded, sharp striæ very fine over the beaks, becoming coarser towards the margins; color pale horn in the adult, straw to whitish in younger specimens; shell rather thin; hinge comparatively stout, plate rather narrow; cardinal teeth; the right slightly curved, its posterior end much thicker and grooved, the left anterior slightly curved, the posterior oblique, long, more projecting than the anterior; lateral teeth rather large, cusps pointed, strongly rugose, and so are the grooves, the outer posterior in the right valve comparatively long; ligament moderately thick.

Size: long. 3, alt. 2.5, diam. 2 mill.

Habitat: Alabama: Calera, in the current of a creek, and pools left on same; Town Creek at Montevallo; spring creek at Ebenezer Church, a spring branch in Big Wills Valley, six miles south of Valley Head, all collected by Mr. Smith in 1904, and sent for examination by Mr. Bryant Walker.

Pis. limatulum is related to *P. punctatum* Sterki, but considerably larger, and like that minute *Pisidium*, ranges under the *Rivulina* group. With a little care, it cannot be mistaken for any other species; even half-grown examples are considerably different from *P. punctatum*.

PUBLICATIONS RECEIVED.

LIST OF SHELL-BEARING MOLLUSCA OF FRENCHMAN'S BAY, MAINE. By Dwight Blaney (Proc. Boston Soc. Nat. Hist., Vol. 32, no. 2, pp. 23–41). This valuable list of 127 species and 5 varieties collected during the summers of 1901–1904, shows what can be done by careful and continuous work, and adds much to our knowledge of the distribution of New England marine shells. C. W. J.

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THE NAUTILUS

A MONTHLY
DEVOTED TO THE INTERESTS
OF CONCHOLOGISTS.

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C. W. JOHNSON, Curator of the Boston Society of Natural History.

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THE NAUTILUS.

VOL. XVIII. APRIL, 1905. No. 12

LIST OF SHELLS FROM NORTHWESTERN FLORIDA.

BY BRYANT WALKER.

In the fall of 1902, Messrs. G. F. & B. H. King of Mimsville, Ga., to whom we are indebted for the discovery of several new species of *Unionidæ* recently described in the Nautilus, took a wagon trip of more than one hundred miles from their home into western Florida. No land shells were collected. The list of fluviatile species, however, though not large, is of considerable interest, especially as there are practically no records from that part of the state. Entering Florida at Neal's Landing, the Chipola River was struck at Marianna. From there the route continued southwesterly to Econfina on Econfine Creek. No *Unionidæ* were found in the Econfine, but in a tributary called Moccasin Creek, several species occurred. The Chipola River is a branch of the Flint River. Econfine Creek flows directly into St. Andrew's Bay.

Ampullaria depressa Say, Chipola River.

Vivapara georgiana Lea, " "

Campeloma genicula Con., " " and Mud Creek, a tributary of the Econfine.

Lioplax pilsbryi, n. sp. Pl. ix. figs. 1, 2 and 3.

Chipola River (type locality), Econfine Creek, and Mud Creek, Fla.

Shell elevated, turreted, imperforate, rather thin, olive-green above, becoming almost black on the body whorl with numerous dark

strigations: whorls seven, ventricose, moderately increasing above, rapidly so toward the base, those of the spire carinated with a sloping shoulder, lower whorls sub-carinate, flattened above and strongly shouldered; lines of growth strong, decussated by numerous, closely set, elevated, transverse lines; suture very deep; aperture rather large, very oblique, regularly oval, sides nearly parallel, regularly rounded above and below; outer lip thin, drawn back above and somewhat sinuous; inner lip closely appressed throughout.

Alt. (Fig. 1 apex eroded) 30, width 18 mm.
" " 2 " 28 " 20 "

This fine species, the largest yet known of the genus, was found in some abundance in the Chipola River. Only a few occurred at the other localities.

It differs from all the described forms in its size and peculiar combination of characters. Young specimens of about five whorls, except in being imperforate, slightly wider and more strongly transversly striate, closely resemble striate specimens of *L. subcarinata* in shape, the shouldering and carination of the whorls being almost exactly the same. But with increase of growth the shape becomes entirely different and the mature shell in general appearance approaches Lea's *L. elliottii*, but differs from that species in being very much larger, proportionately wider, with the lower whorl more flatly shouldered, with transverse raised lines and imperforate axis.

I take great pleasure in naming it after Dr. Pilsbry.

Goniobasis catenaria Say. Chipola River and Econfine Creek.
" *dooleyensis* Lea. " " "

This species is apparently one of the characteristic forms of the Flint river drainage system. Originally described from Vienna in Dooley County, Ga., the Messrs. King have found it in great abundance in Rawle's Spring and Dry Creek, Early County, and in the Chickasawahatchee Creek, Baker County. From Mr. A. C. Billups, I have also received it from the Flint River. On the present trip it was found in both the Chipola and Econfine.

UNIONIDÆ FROM THE CHIPOLA RIVER.

Medionidus kingii B. H. Wr.
Lampsilis paulus Lea.
" *subangulatus* Lea.

Lampsilis claibornensis Lea.

" *lienosus* Con. Not typical; referrable to Lea's *caliginosus*.

" *lienosus unicostatus* H. B. Wr.

" *vibex* Con. (approaching var. *nigrinus* Lea.)

Anodonta gibbosa Say,

Unio singularis B. H. Wr.

" *arctatus tortivus* Lea. Very abundant and extremely variable.

" *coruscus* Gld.

" *nigellus* Lea var.? Very close to some forms of the variable *arctatus tortivus* Lea.

" *curvatus* Lea, a single young shell is thus named by Mr. W. A. Marsh Sr. It is quite similar to young specimens of the Moccasin Creek form referred to *obnubilis* (*nolani*) by Mr. Marsh, but differs in being rather more elongated, more pointed and less broadly rounded posteriorly.

Unio chipolaensis, n. sp. Pl. ix. figs. 6 and 7.

Shell ovate, not very thick, somewhat inflated in the umbonal region, evenly rounded before and biangulate behind with a slight emargination just above the superior posterior angle; dorsal margin decidedly curved, basal margin slightly but regularly curved, epidermis smooth, chestnut-colored, darkening to black on the umbos, with several darker lines indicating arrested periods of growth. Umbonal slope well rounded towards the beaks, but flattening out and becoming slightly biangulate posteriorly. Beaks prominent, apparently incurved when perfect. Cardinal teeth compressed, crenulate; those in the left valve are nearly in a straight line. Lateral teeth rather long, slender and slightly curved. Cicatrices distinct. Cavity of the beaks large and rounded. Nacre salmon-color, darker anteriorly.

Length 32, width 56.5, diam. 22 mm.

Chipola River, Fla.

This species is a member of group of *U. buckleyi* and is distinguished by smooth, chestnut epidermis, entirely without rays, but ornamented with concentric dark bands such as occur in *Pleurobema chattanoogaensis*, inflated umbonal slope, prominent beaks and biangulated posterior extremity with a slight emargination above. It is related to some forms of *U. burtchianus* B. H. Wr, but differs in

being less elongated and more inflated with more prominent beaks. The color both of the epidermis and nacre is also quite different.

Messrs. Frierson and Marsh, to whom specimens have been submitted, agree that it is distinct from any described form, and Mr. Simpson remarks that it "looks more or less like two or three species, but I cannot refer it to anything." Mr. B. H. Wright suggests that it is close to some forms of *U. confertus* Lea, but both in shape and color, which is remarkably constant in all the specimens seen, it seems sufficiently distinct.

UNIONIDAE FROM MOCCASIN CREEK, A TRIBUTARY OF THE ECONFINE RIVER.

Lampsilis anodontoides floridensis Lea.
" *lienosus* Con. (*caliginosus* Lea).
" *vibex* Con. (*rutilans* Lea).
Unio *downiei* Lea, var.
" *arctatus tortivus* Lea.

A very large, heavy, inflated form similar to Lea's *tetricus*, longer but not so swollen as that figured by Simpson in Proc. U. S. Nat. Mus. xv. Pl. lxiv. figs. 3 and 4. Associated with this form is another more compressed, strongly rayed and with umbonal slope, decidedly biangulate, which Mr. Simpson thinks is also referable here. Mr. Marsh considers this identical with Wright's *nolani*, a synonym of the following species.

Unio obnubilis Lea. Two specimens smaller, thicker and apparently quite distinct from the last-mentioned form are referred to *santeensis* Lea, by Marsh, to which Simpson somewhat doubtfully assents.

A NEW SPECIES OF MEDIONIDUS.

BY BRYANT WALKER.

Medionidus simpsonianus n. sp. Pl. ix. figs. 4 and 5.

Shell small, rather thin, somewhat inflated, elliptical, inequilateral, strongly plicate on the posterior slope. Epidermis dark yellow, smooth, polished, covered with dark green pencilled rays which tend to break into a net-work of angular lines covering the entire surface. Anterior end compressed, rounded, and slightly elevated above the

line of the hinge superiorly; posterior extremity obtusely rounded, the tip being nearly on the median line of the shell; posterior ridge somewhat angled; dorsal slope covered with strong sub-concentric, somewhat irregular ridges extending from the posterior ridge to the margin; basal margin regularly curved; hinge margin nearly straight, slightly angled between the cardinal and lateral teeth. Cardinal teeth crenulate, erect, rather compressed, those in left valve nearly on the same line; lateral teeth slender, straight and nearly smooth. Anterior cicatrices well impressed, posterior cicatrices distinct, dorsal cicatrices under the plate behind the cardinal teeth. Beak cavity rather shallow, cavity of the shell deep and uniform. Nacre bluish-white, rather thicker anteriorly.

Length 36; height 19, width 13 mm.

Habitat, Calvary, Ga.

Only three specimens of this little species were received, and these, unfortunately, without any information as to the stream where they were found.

This species belongs to the "*conradicus*" group of *Medionidus* as defined by Simpson, and is most nearly related to *M. penicillatus*. But it differs decidedly from all the described species in the compression of the anterior end, the elevation of the superior-anterior margin and the regularly rounded posterior margin, which is equally curved above and below, the tip being nearly on the median line and not depressed toward the basal margin as in all the allied species. The ridges on the posterior slope are quite as strong, but not so numerous as in *M. kingii*.

It is named in honor of Mr. Charles T. Simpson, whose recent retirement from active conchological work has been a source of regret to all interested in American Conchology.

A NEW LOCALITY FOR CERION INCANUM.

BY CHARLES T. SIMPSON.

I have just returned from a visit to "Baker's Haulover," the narrow strip of land between the extreme upper end of Biscayne Bay, Florida, and the Atlantic. This strip may be twenty rods wide, is low and covered with mangroves on the inner side, and next the ocean is sand-bank twelve or fifteen feet high with shore grapes, low

shrubs, grass and weeds. On the sandy part I found immense numbers of dead shells of *Cerion incanum* and a diligent search revealed a few living examples on grass close to or even on the sand. As the weather for the past few days had been unusually cold, I thought it possible that it might be buried in the sand, and digging around the roots of bunches of grass I unearthed the species alive by thousands. In some cases a double handful would be buried around a small bunch of grass. Many of the specimens had a thin, almost transparent epiphragm at the aperture, while occasionally it was deeper seated, thicker and white.

The apex is rather conical, the apical whorls are corneous, while the last whorl has strong irregular wide-spaced riblets and a dark base, often outlined by a revolving bluish stripe. The body of the shell is a uniform bluish-white, and occasionally a specimen has the base of nearly the same color. In a somewhat wide experience of collecting this species, I have never seen it so abundant. Associated with it were a few *Polygyra carpenteriana* and rarely a *Glandina truncata minor*.

In the Manual of Conchology, Vol. xiv. p. 215, Pilsbry states that Mr. S. N. Rhoads found five specimens of the *Cerion incanum* on Virginia Key, but that he thought they had probably been drifted there, and Pilsbry believes this key to be the extreme northeastern limit of the species. "Baker's Haulover" is eight or nine miles north of the extreme northern end of Virginia Key and is on the mainland. I followed up the beach from the "Haulover" for a half mile perhaps, but there seemed to be no diminution in the numbers of specimens at the farthest point reached.

Lemon City, Florida.
Jan. 29, '05.

SEXUAL DIMORPHISM IN STROMBUS PUGILIS LINNE.

BY HAROLD SELLERS COLTON.

Sexual dimorphism does not seem to be common among the Gasteropoda. It can occur only in the sub-class Streptoneura, in which the sexes are separate. Cases are seldom reported. When they are, they are hidden amid a mass of facts in some large work. I find that sexual dimorphism has been noticed in *Margarita helicina*[1] and

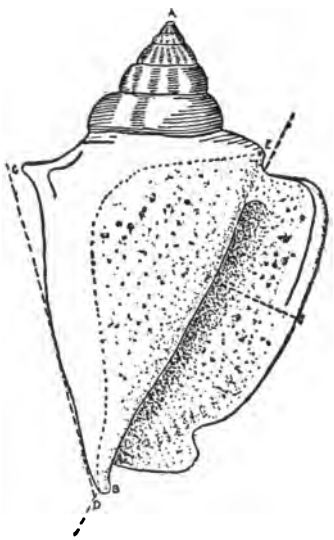
[1] Dwight Blaney, Proc. Boston Society of Nat. Hist., Vol. XXXII., No. 2, p. 38, 1904.

Buccinum undatum[1] by Morse, in *Crepidula*[2] by Conklin, in *Rissoa aculeus*[3] and *Littorina littorea*[4] by Jeffreys, and in *Fulgur carica* by Burnett Smith.[5] As far as I can find out, no one has reported it in *Strombus pugilis*.

The material was collected to determine if the variety *alatus* was but a case of sexual dimorphism, and if not was there any such difference. I collected most of the individuals after a severe "norther" in the latter part of January which had cast them up in moderate numbers on the beach of Sand Key near Clearwater Harbor, Florida. Of those I examined, nineteen were males and nine were females.

The variety *alatus* differs from the type in that it lacks the characteristic tubercles on the body whorl. Forty-four per cent of the females and twenty-six per cent of the males showed a tendency to be smooth. Of these observations and the ones to follow, the probable error is so very large, on account of the small number of individuals at hand, that only where the differences are pronounced, are the results of value.

Fig. 1.



On the material at hand I made the following measurements;-(Fig. 1) the length AB, the width CE, the angle at the apex, the columellar angle, and the aperture FG. On account of the ornamentation of the shell, the width CE and the apical angle were found to be so variable as not to be favorable for comparison. The ratio of AB to FG was in the case of females larger than in the case of the males. If this be true, and I have too few individuals to be sure of it absolutely, a very interesting feature is shown. The

[1] E. S. Morse, 1876, Proc. Boston Society of Nat. Hist., Vol. XVIII.

[2] E. G. Conklin, Jour. of Morphology, 1897, Vol. XIII., No. 1.

[3] Jeffreys, British Conchology, Vol. IV., p. 38.

[4] *Ibid.*, Vol. III., p. 343.

[5] Burnett Smith, 1902, Proc. Acad. Natural Science of Phila., Vol. LIV., p. 507.

aperture of the male is larger than that of the female. This is true also in Nautilus pompilius.[1]

The average columella angle CDE is for males 37.4° and for females 40.4°. The columella angle of the females is larger than that of the males. This is characteristic, and it is possible to separate the males from the females in a large series at a glance with very few errors. One male, however, showed the female angle and one female the male angle.

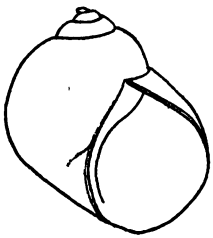
The results of these observations indicate that the relation of the variety *alatus* to the type is not of sexual character, that the aperture of the male may be a trifle wider than that of the female, but the columella angle is a true case of sexual dimorphism.

A NEW SPECIES OF SOMATOGYRUS FROM SOUTH ALABAMA.

BY T. H. ALDRICH.

SOMATOGYRUS WALKERIANUS n. sp.

Shell small, globose, rather solid, smooth, color greenish-yellow. Spire short, obtuse. The nucleus is obliquely placed, and projects markedly beyond the outline of the spire on the left side. Whorls about four, suture impressed. Body whorl large, slightly shouldered; outer lip slightly expanded. Inner lip thickened and rounding below into a rather narrow and deep groove, which runs up into the slightly perforate umbilicus. Aperture rather pointed above and rounded at the base. Alt. 4.25; diam. 4 mm.



LOCALITY.—Conecut River, Escambia Co., Ala., twenty miles east of Brewton, living on limestone rocks, rather common.

REMARKS.—This shell resembles a small *S. subglobosus* Say, but is not so strongly shouldered, has a much lower spire, and also the groove behind the pillar lip. Examples in cabinets of A. A. Hinkley and Bryant Walker. Type in my collection.

---

[1] Bather, 1895, Natural Science, Vol. VI., p. 411.

NEW SPECIES OF LYMNÆA.

BY F. C. BAKER.

Lymnæa owascoensis nov. sp.

Shell small, elongated, turreted, rather thin; color light horn; surface shining, marked by close-set lines of growth; in some specimens there is a tendency to form raised, keel-like ridges, as in malleated forms of *Lymnæa;* apex small, round, of the same color as the rest of the shell; whorls 5½, shouldered, rather flat-sided; spire elongated, sharply conical; sutures deeply impressed; aperture roundly ovate, about two-thirds the length of the entire shell; outer lip thin, inner lip erect, causing the aperture to be almost continuous; columella rather broad, flattened, somewhat thickened by a callus but without a plait; umbilicus round, wide and deep, exhibiting one volution; the base of the shell is roundly flattened.

Length 8.50; width 3.50; aperture length 3.50; width 2.00 mill.

Length 8.75; width 4.00; aperture length 3.50; width 2.00 mill.

Habitat: Owasco Lake, N. Y., collected by Dr. Howard N. Lyon.

This distinct little shell may be known by its turreted shell, long spire and large, open umbilicus. Its nearest ally is *desidiosa.*

Lymnæa bryanti nov. sp.

Shell small, thin, robust, pointed; color light horn; surface rather dull, marked by rather indistinct lines of growth, but without impressed spiral lines; the base of the shell is marked by several indistinct spiral ridges, and the last whorl is malleated in some specimens; whorls 4½-5, rounded, roundly shouldered, rapidly increasing in diameter; the last whorl is large and quite convex; spire acutely conical, shorter than or as long as the aperture; sutures well impressed; aperture elliptical or elongate-ovate; columella a trifle thickened, without a plait, the callus turned back and appressed to the parietal wall as in *cubensis;* umbilicus distinct and rather widely open.

Length 7.50; width 4.00; aperture length 4.00; width 2.25 mill.

Length 6.50; width 4.00; aperture length 4.00; width 2.00 mill.

Length 6.50; width 4.00; aperture length 3.50; width 2.00 mill.

Habitat, Alameda Co., California. Collection of Mr. Bryant Walker.

This little shell is related to *cubensis* but is easily distinguished by its thinner shell, more pointed spire, less rounded whorls and more elongate aperture. The shape of the aperture and the form of the columella are different from those of *humilis*.

Lymnæa stagnalis var. *higleyi*, new variety.

Shell ovate with short spire and wide, spreading aperture which is twice the length of the spire; whorls rather flat-sided, the last somewhat shouldered; collumellar plait very large, thick, heavy, shining, white; aperture widely flaring, the upper part somewhat shouldered; umbilicus tightly closed by the closely appressed, reflected, columellar callus.

Length 50.00; width 30.00; aperture length 32.00; width 22.00 mill. (Ferriss).

Length 42.00; width 27.00; aperture length 27.00; width 19.00 mill. (Academy).

Length 38.00; width 22.00; aperture length 25.00; width 17.00 mill. (Walker).

Habitat; Michipecoten Bay, North Shore, Lake Superior.

In a lot of specimens of *Lymnaea stagnalis* sent to the writer for examination by Mr. J. H. Ferriss, there were three specimens which differed markedly from any described American form of this species. The nearest variety seems to be Hemphill's *occidentalis*, but that form is decidedly more shouldered on the body whorl, the aperture does not flare and the spire is more "pinched." The color is a clear translucent whitish horn. The writer has seen no European variety exactly comparable with this variety.

It is named in honor of Prof. William K. Higley, Secretary of the Chicago Academy of Sciences.

GLOCHIDIA OF UNIO ON FISHES.

BY CHAS. H. CONNER.

A short time ago (Feb. 25, 1905), while hunting especially for fresh-water shrimps, I obtained some young minnows and sun-fish (*Eupomotis gibbosus*). Upon examination of the latter, I found several *Glochidia*, apparently of *Anodonta cataracta* Say, clinging to the anal and caudal fins.

On Monday, Feb. 27th, I had the honor of submitting the specimens, *in situ* and intact, to Dr. Pilsbry and Mr. Vanatta, of the Academy of Natural Sciences, for verification, and they confirmed the discovery.

As no record of observed parasitism in America of *Glochidia* has been made in any scientific journal that I am aware of, it was a great pleasure to find them living, and confirm the observations made in Europe.

The fish were taken from the most eastern of the three connected ponds at Westville, N. J.

NOTES.

MARRATT AND THE CONCHOLOGIA ICONICA.—In the February NAUTILUS, p. 120, in the extract from "The Museums Journal," concerning the late F. P. Marratt, it is stated that he was the author of the monograph on *Oliva* in Reeve's "Conchologia Iconica." This is an error which might be corrected if you think it necessary.

When Lovell Reeve wrote that monograph in 1850, Marratt was unknown as a conchologist.

Of the "Conchologia Iconica" Reeve was author of Vols. I.–XIV., and as far as *Tornatella* in Vol. XV. The rest of that volume, commencing with *Pyramidella* to the end, and Vols. XVI.–XX. were the work of the late G. B. Sowerby.—EDGAR A. SMITH, British Museum (Natural History).

NOTE ON THE GENUS APOREMA DALL.—This group, of which *Pholadonya arata* Verrill is the type was named in 1903. But I am informed that *Aporema* was used in 1890, by Scudder, for an insect, and the molluscan genus therefore requires a new name. I propose for it *Panacca*.—WM. H. DALL.

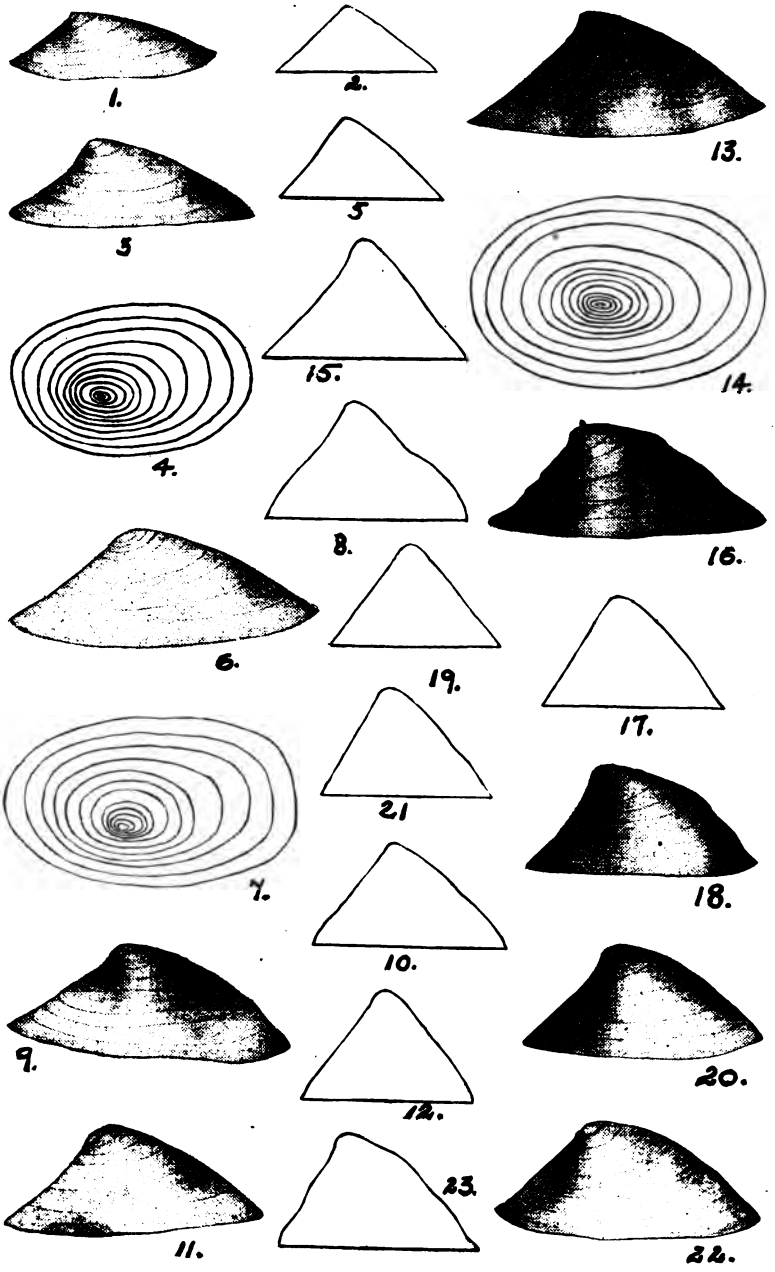
NOTE ON TRICHODINA ANCEY.—Inasmuch as the name *Trichodina*, proposed by Ancey in 1888 for an Achatinoid land shell (cf. Man. Conch. pt. 67, p. 182) was used in 1830 by Ehrenberg for a genus of Foraminifera, I would propose that it be replaced by *Petriola*.—WM. H. DALL.

THE GENUS VAUCHERIA PALLARY.—Mr. Pallary describes (Journ. de Concl. '04, p. 7.) a shell supposed to be that of a slug, under the name *Vaucheria tingitana*. M. Dautzenberg has recently received fresh specimens, which proved to be plates (the tergum) of *Pollicipes cornucopia*, a stalked barnacle of European seas. The supposed new genus therefore becomes a synonym of the Cirrhipede.

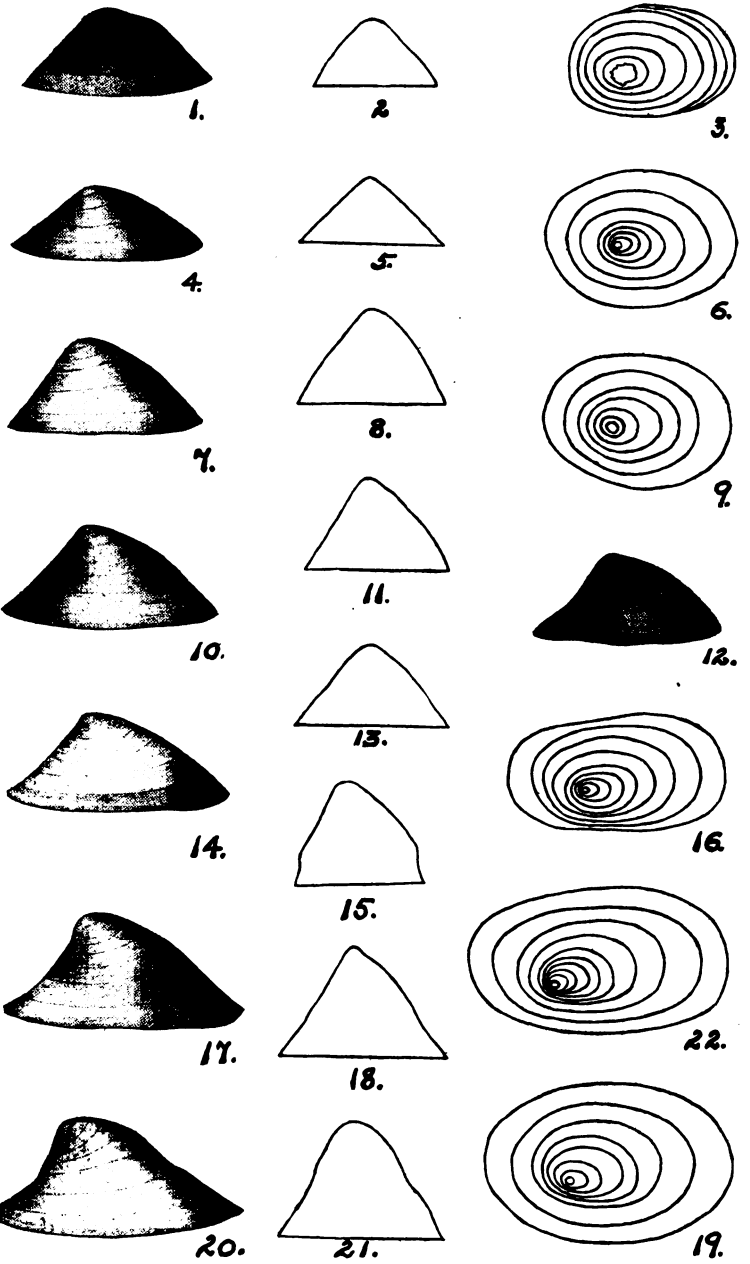
SNAILS IN SEPULCHRES.—While I was very recently conducting the exhuming of quite a number of Indian skeletons, within the corporate limits of Des Moines, Iowa, I found, very much to my surprise, several living specimens of *Zonitoides minusculus* (Binn.) and *Helicodiscus lineatus* (Say,) very snugly associating with the long dead and buried aborigines. They attracted my attention by being among some of the small white beads, which were about the same size and color. I would often pick up a shell for a bead. They were mingled with decayed fibrous roots, fragments of blankets etc., in among the bones, often in the crevices of broken and decayed bones. Everything was in a very advanced stage of decay, denoting in the neighborhood of seventy-five years' burial; the evidence showed that the bodies had been wrapped in blankets and buried in wooden boxes. In a number of instances the entire outfit, box and all, was reduced to a mere trace less than half an inch in thickness; others were two or three inches thick, and a few produced fairly well-preserved skeletons. All contained shells of the above-named species. The burials lay from eighteen inches to three and a half feet deep, in a very loose, fine, sandy, Pleistocene loam. If the snails were at home, as they apparently were, is not their association with dead mens' bones an unusual occurrence?—T. VAN HYNING, Supt. Mus. State Hist. Dept. Des Moines, Ia.

IN the last number of the Proceedings of the Malacological Society of London, Dr. von Ihering adds three new species to the genus *Tomigerus*, the first for many years.

A new species of Achatina, *A. morrelli*, is described by Mr. Preston, from the Zambesi river. It seems to be closely related to *A. capelloi*. Furtado—H. A. P.



WALKER: ON ANCYLUS.



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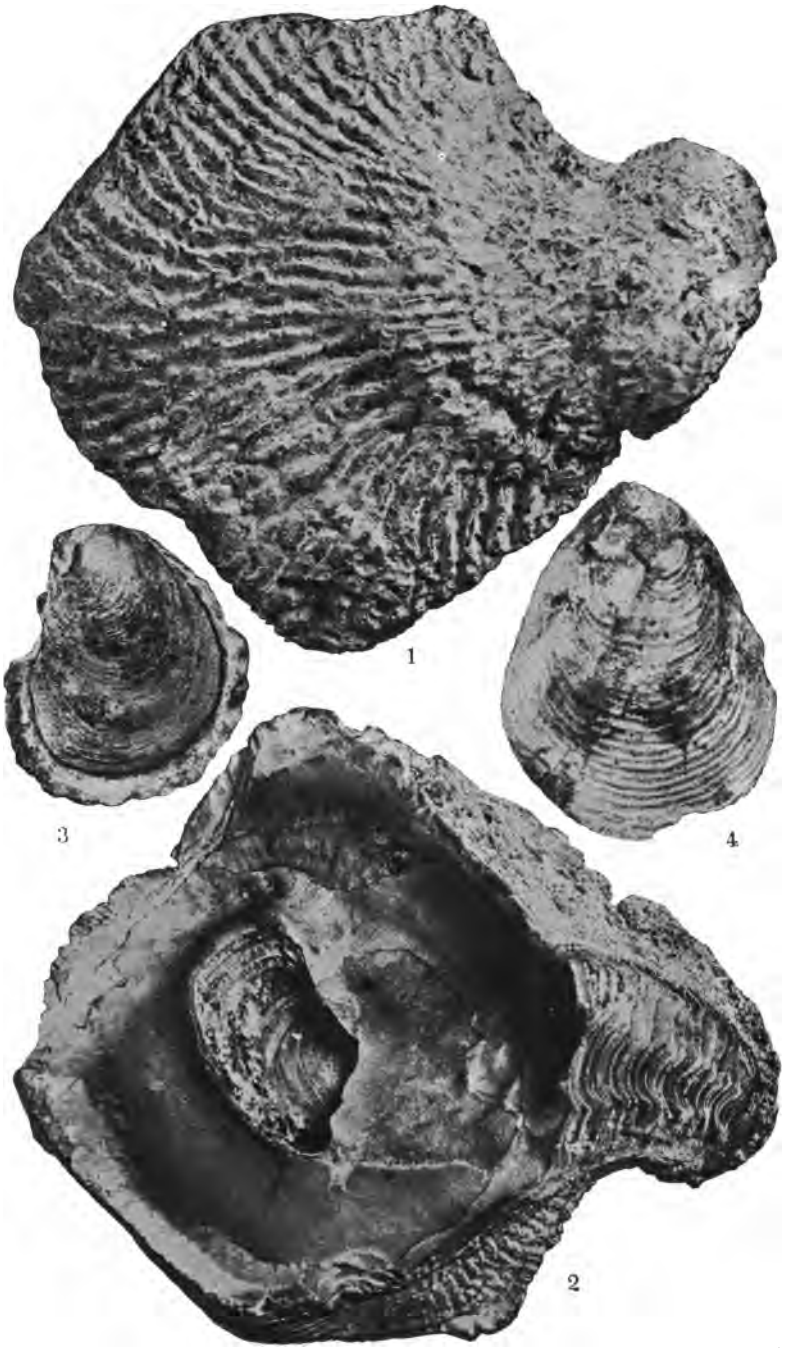
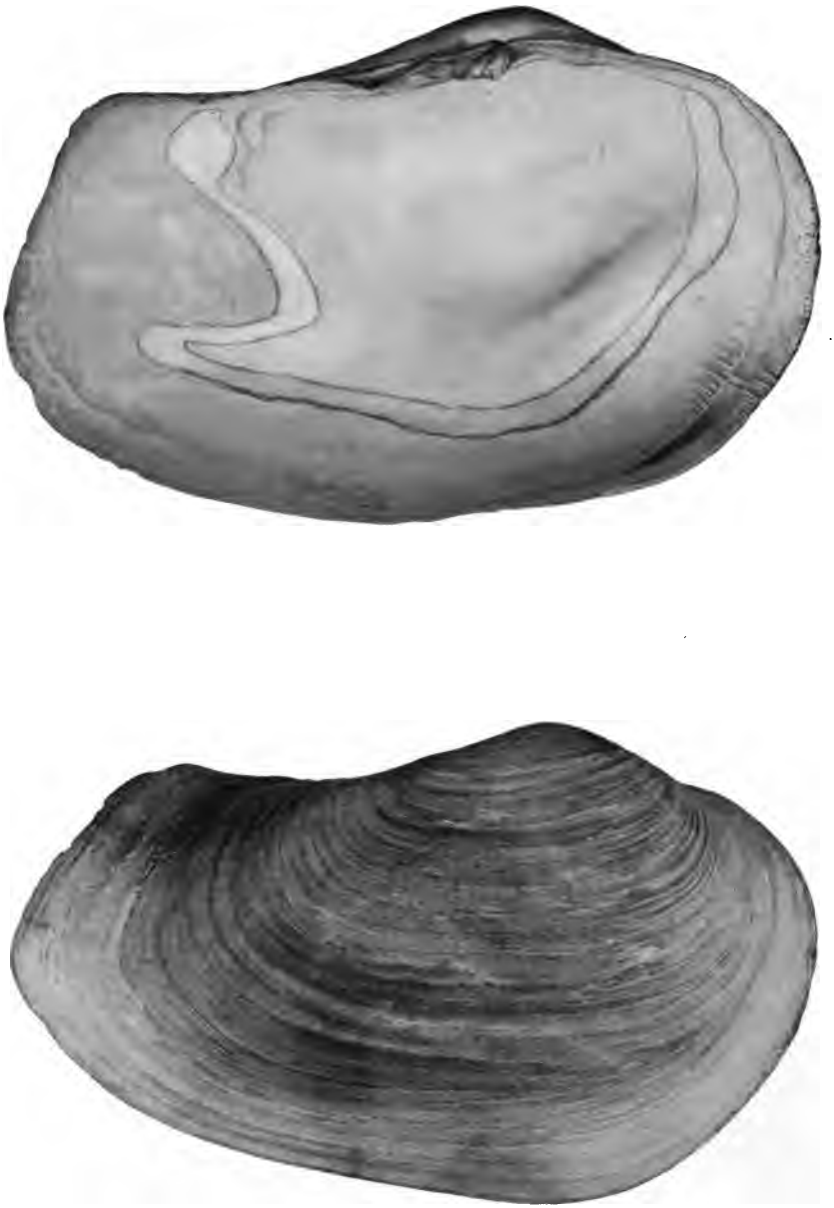


ALDRICH: OSTREA ARROSIS.



JOHNSON: PANOPEA BITRUNCATA.

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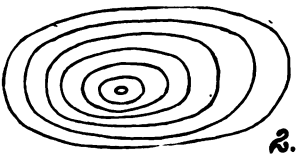

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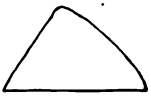

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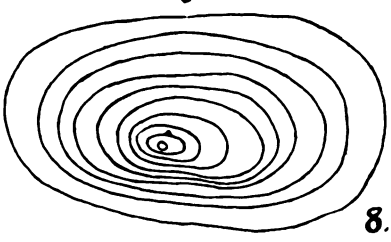

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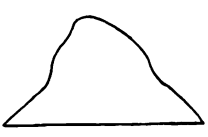

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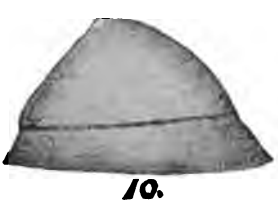

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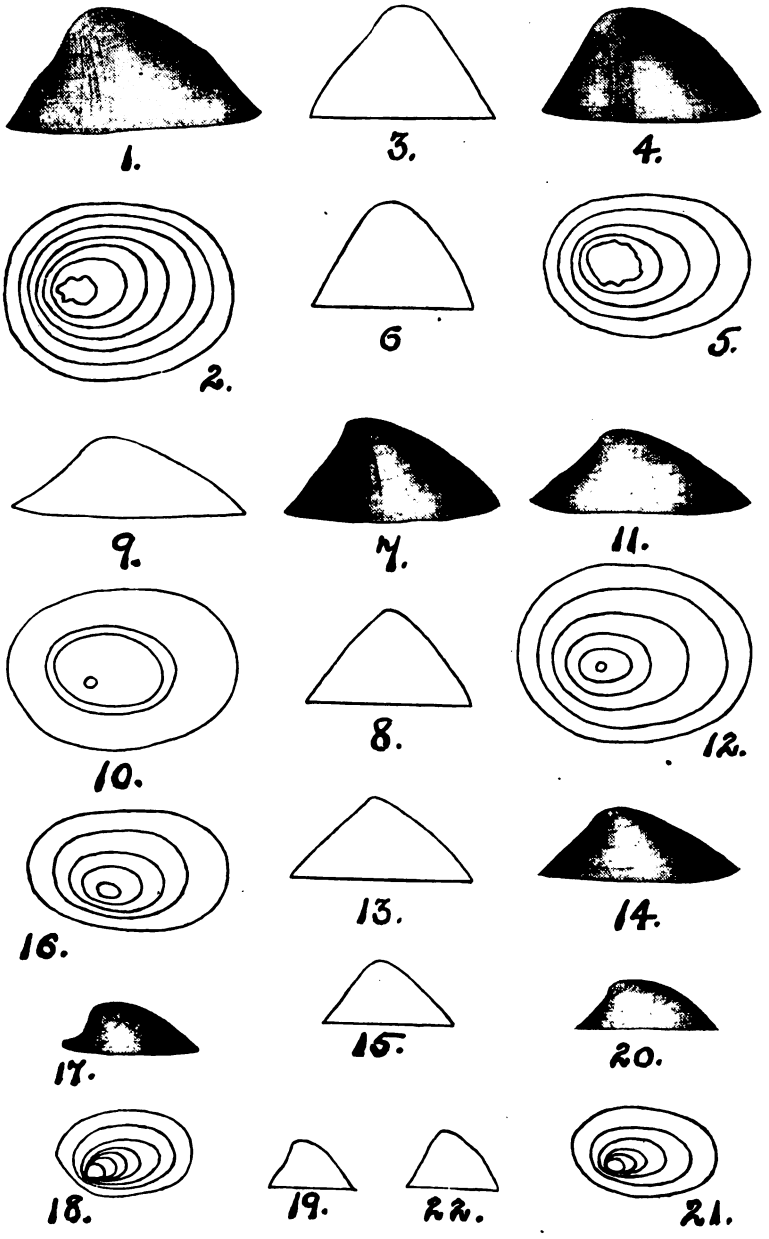
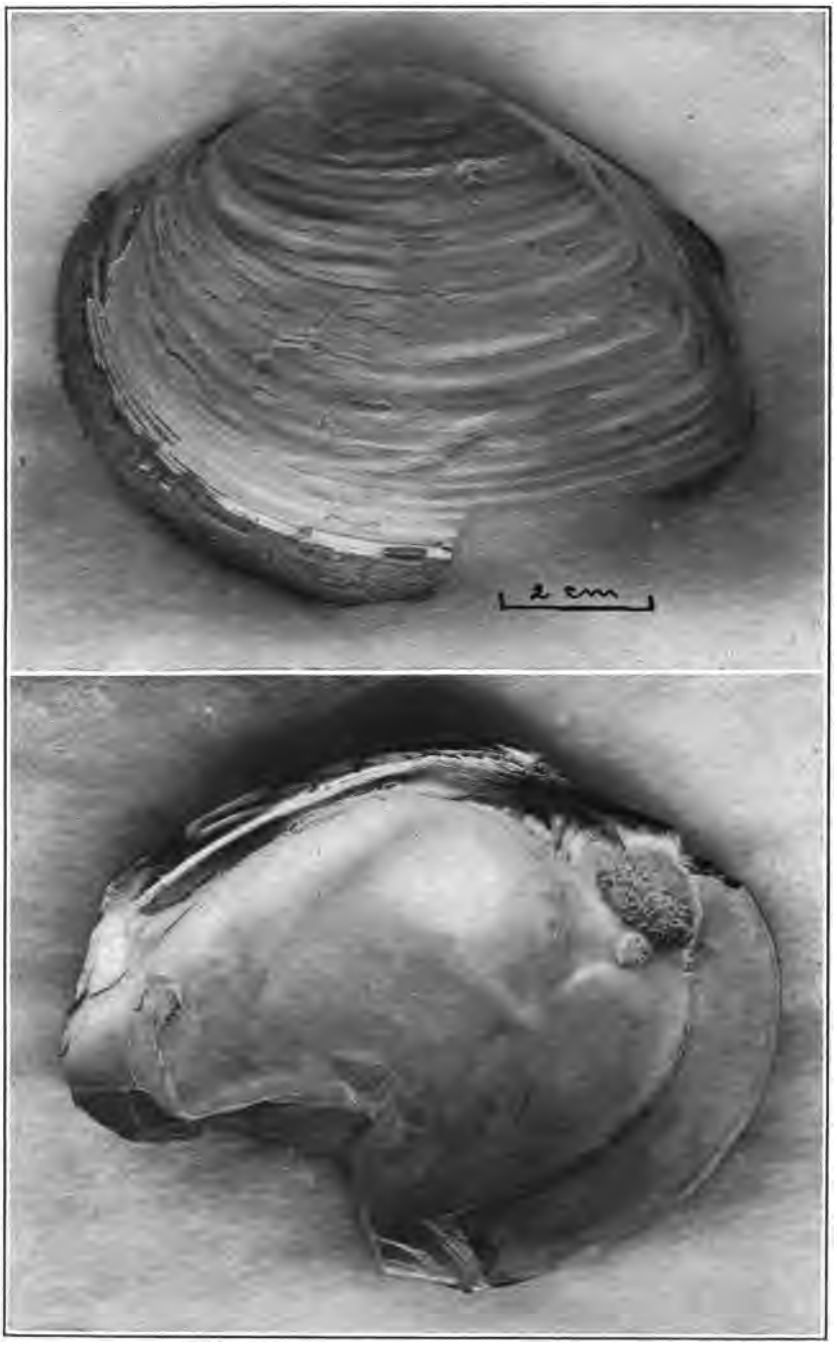
WALKER: AMERICAN ANCYLUS.



WALKER: AMERICAN ANCYLUS.



WAGNER: FOSSIL UNIO CRASSIDENS FROM WISCONSIN.

EDWARD H. ASHMUN.